AMENDMENTS TO THE CLAIMS:

1. (CURRENTLY AMENDED) A photovoltaic cavity converter module for admitting therein concentrated radiation produced by ~~converting coherent laser radiation from~~ a laser emitting a highly collimated power beam of coherent light having ~~at~~ a selected wavelength and converting the admitted laser radiation at a high efficiency of about 65% into electrical power, said module comprising:

(a) a housing having a cavity of generally optimized closed shape inside said housing, said cavity having a light input aperture or opening of a selected diameter with a total aperture area of A_i for the cavity, said aperture for intercepting incident radiation thereon produced by the laser and admitting the incident radiation into the cavity, the cavity having a total ~~an~~ internal surface area A_s and ~~including an~~ wherein the total aperture area of the opening being about 0.01 or less of the total internal surface area of the cavity, ~~opening for admitting said laser radiation into said cavity,~~ such that the aperture allows only a relatively small portion of the radiation admitted into the cavity to escape out of the cavity, thereby trapping in the cavity the incident radiation admitted therein in an amount proportional to the ratio of the total internal surface area to the total entrance aperture area to thereby define the total energy trapped in the cavity ~~said opening having an entrance aperture area A_i that is substantially smaller than A_s~~;

(b) a concentrator for intercepting and concentrating the laser radiation to a selected beam diameter smaller than the diameter of the aperture and for directing the radiation into the light input aperture; and

(~~b~~c) a plurality of photovoltaic cells within said cavity, said photovoltaic cells having an appropriate energy bandgap ~~energy to respond~~ maximally responsive to said wavelength and to generate said electrical power.

2. (ORIGINAL) The photovoltaic module of Claim 1 wherein each said photovoltaic cell is a single junction cell having a receiving surface on which said laser radiation is incident.

3. (ORIGINAL) The photovoltaic module of Claim 2 wherein each photovoltaic cell is provided with a back surface mirror for reflecting photons not absorbed by a photovoltaic cell on which said photons are incident.

4. (ORIGINAL) The photovoltaic module of Claim 2 wherein said photovoltaic cells have a given quantum efficiency selected to optimize the conversion of said wavelength of said laser.

5. (CURRENTLY AMENDED) The photovoltaic module of Claim 1 further including a Cassegranian comprising a primary concentrator of parabolic shape for prefocusing the laser radiation, and a secondary concentrator of hyperbolic shape ~~system~~ for receiving pre-focused ~~said~~ laser radiation from a primary concentrator and directing the beam into~~,~~ ~~,secured to~~ said opening.

6. (CURRENTLY AMENDED) The photovoltaic module of Claim 5 wherein said primary and secondary concentrators include~~s~~ inner and outer surfaces that are mirrored.

7. (ORIGINAL) The photovoltaic module of Claim 6 wherein said secondary concentrator is a non-imaging, compound parabolic of hollow design.

8. (CURRENTLY AMENDED) The photovoltaic module of Claim 6 wherein said secondary concentrator has a Bezier optimized contour to

provide a combination of an optimal ~~maximum~~ acceptance angle, and optimal ~~maximum~~ concentration, and ~~minimum~~ minimal height.

(ORIGINAL)

9. (CURRENTLY AMENDED) The photovoltaic module of Claim 5 wherein said secondary concentrator is dielectric and further includes an integral extractor rod for guiding said light towards the center of said cavity and then to emit photons near uniformly in all directions to provide good angular isotropy of said photons.

10. (ORIGINAL) The photovoltaic module of Claim 1 wherein the ratio of A_i to A_s is 0.01 or less.

11. (CURRENTLY AMENDED) The photovoltaic module of Claim 1 wherein said photovoltaic cells have an optimized energy bandgap ~~energy~~ to respond to said wavelength.

12. (ORIGINAL) The photovoltaic module of Claim 11 wherein said photovoltaic cells have a peak of quantum efficiency response matching said wavelength.

13. (CURRENTLY AMENDED) The photovoltaic module of Claim 1 wherein the laser radiation contains a power component of a selected wavelength and a multiplexed or imbedded communications component of a different wavelength, and further including

(a) a plurality of cells and fast photon detectors within said cavity, at least some of said cells each having an energy bandgap corresponding to the power component of the laser radiation, and at least some of said fast photon detectors ~~cells~~ having an energy bandgap corresponding to the communications component of the multiplexed laser radiation, so that their spectral responses span different wavelength ranges; and

(b) at least one wavelength filter associated with each cell, and another wavelength filter associated with each fast photon detector said wavelength filters providing selective transmission corresponding to the respective energy bandgaps of the cells and the fast photon detectors and reflection of incident radiation respectively ~~to without the bandgap of the cell~~ to demultiplex the components and to assist in maximizing absorption of each component of the laser radiation by the cells and by the fast photon detectors having ~~the~~ corresponding energy bandgaps.

14. (CURRENTLY AMENDED) The photovoltaic module of Claim 13 wherein said solar cells are multi-junction solar cells to allow frequency or color change in the power component of the multiplexed beam.

15. (CURRENTLY AMENDED) In combination, a reflecting concentrator system and a photovoltaic module for admitting therein coherent radiation produced by ~~converting coherent laser radiation from~~ a laser ~~emitting~~ emitting coherent light at a selected wavelength and diameter, and converting the admitted radiation into electrical power, wherein:

(a) said module comprises

(1) a housing having a cavity of generally optimized closed shape inside said housing, said cavity having a total ~~an~~ internal surface area A_s and including an opening having a selected diameter smaller than the laser radiation, and having a total aperture area A_i for admitting said laser radiation into said cavity, said opening having an entrance aperture area A_i ~~that is substantially smaller than A_s, and~~ of about 0.01 or less of the total internal surface area of the cavity, such that the aperture allows only a relatively small portion of the radiation admitted into the cavity to escape out of the cavity, thereby trapping in

the cavity radiation admitted therein in an amount proportional to the ratio of the total internals surface area to the entrance aperture areal,

(2) a plurality of photovoltaic cells within said cavity, said photovoltaic cells having ~~an~~ selected appropriate bandgap energy ~~to respond~~ responsive to said wavelength ~~and~~ to generate said electrical power;

(b) said reflecting concentrator comprises

(1) a primary concentrator for intercepting and concentrating said laser radiation from the selected diameter, and

(2) a secondary concentrator for receiving said concentrated laser radiation from the primary concentrator and further concentrating said laser radiation from said primary concentrator to a diameter less than the diameter of the aperture ~~and further concentrating said laser radiation~~; and

(c) said photovoltaic module positioned for receiving said further concentrated laser radiation from said secondary concentrator.

16. (ORIGINAL) The combination of Claim 15 wherein said reflecting concentrator comprises a Cassegranian concentrator.

17. (ORIGINAL) The combination of Claim 15 wherein said Cassegranian concentrator comprises as said primary concentrator a parabolic concentrator and as said secondary concentrator a hyperbolic concentrator.

18. (ORIGINAL) The combination of Claim 15 wherein each said photovoltaic cell is a single junction cell having a receiving surface on which said laser radiation is incident.

19. (ORIGINAL) The combination of Claim 18 wherein each photovoltaic cell is provided with a back surface mirror for reflecting

photons not absorbed by a photovoltaic cell on which said photons are incident.

20. (ORIGINAL) The combination of Claim 18 wherein said photovoltaic cells have a given quantum efficiency selected to optimize the conversion of said wavelength of said laser.

21. (ORIGINAL) The combination of Claim 15 further including a secondary concentrator system for receiving pre-focused said laser radiation from a primary concentrator, secured to said opening.

22. (ORIGINAL) The combination of Claim 21 wherein said secondary concentrator includes inner surfaces that are mirrored.

23. (ORIGINAL) The combination of Claim 22 wherein said secondary concentrator is a non-imaging, compound parabolic of hollow design.

24. (CURRENTLY AMENDED) The combination of Claim 22 wherein said secondary concentrator has a Bezier optimized contour to provide a combination of ~~maximum~~ maximal acceptance angle, ~~maximum~~ maximal concentration, and ~~minimum~~ minimal height.

25. (CURRENTLY AMENDED) The combination of Claim 21 wherein said secondary concentrator is dielectric and further includes an integral extractor rod for guiding said light towards the center of said cavity and then to emit photons near uniformly in all directions to provide good angular isotropy of said photons.

26. (ORIGINAL) The combination of Claim 15 wherein the ratio of A_i to A_s is 0.01 or less.

27. (ORIGINAL) The combination of Claim 15 wherein said photovoltaic cells have an optimized energy bandgap to respond to said wavelength.

28. (ORIGINAL) The combination of Claim 27 wherein said photovoltaic cells have a peak of quantum efficiency response matching said wavelength.

29. (ORIGINAL) The combination of Claim 15 further including means for transferring waste heat from said photovoltaic module to a back surface of said primary concentrator for radiation into the surrounding environment.

30. (CURRENTLY AMENDED) The combination of Claim 15 wherein said coherent radiation includes at least two multiplexed wavelengths of radiation, a first wavelength corresponding power component and a second corresponding to communications component, at least some of said photovoltaic cells have an energy bandgap maximally responsive to the power component of the multiplexed radiation and the fast photon detectors have ~~at least some of the photovoltaic cells~~ have an energy bandgap maximally responsive to the communications component such that the power component and the communications component are de-multiplexed..

31. (CURRENTLY AMENDED) The combination of Claim 30 wherein said cells and fast photon detectors are tuned to a frequencies corresponding to the power component or the communications component of the multiplexed laser beam.

32. (CURRENTLY AMENDED) The combination of claim 30 further comprising:

at least one wavelength selective filter associated with each corresponding photovoltaic cell, said filter associated with the cells responsive to the power component for filtering the communications component from the multiplexed wavelengths, and the filter associated with the ~~cells~~ fast photon detectors responsive to the communications component for filtering the power component from the multiplexed wavelengths, such that cells responsive to the power component produce an electrical power output and ~~cells~~ fast photon detectors responsive to the communications component produce a communications output.

33. (CURRENTLY AMENDED) The combination of claim 32 wherein each filter comprises a Rugate filter, for reflecting one of the components of the multiplexed wavelengths, such that only wavelengths are transmitted to each cell and to each fast photon detector for which the cell and each fast photon detector is responsive for producing ~~a~~ the corresponding output.